

ingenious hypothesis, while being a fruitful cause of research, was ultimately found to be untenable. It involved the author in a somewhat bitter discussion with Liebig and his school, who finally proved protein to be by no means a homogeneous body, and to contain a notable quantity of sulphur, in opposition to Mulder's opinion. While failing to solve the problem of the constitution of this group of compounds, a problem which, even despite Schützenberger's remarkable experiments during the past few years, is but half-way toward solution, Mulder vastly increased our knowledge of the proteids by numerous analytical results and thorough studies of the chemical properties of the different members of the group and of their derivatives. As especially interesting papers in this connection should be mentioned his research on the nature of the albuminoid forming the crystalline lens of the eye (1839), and that on the natural and artificial formation of peptone from the albuminoids (1858). Closely allied to this subject were the important researches on chondrine and other gelatinous bodies carried out in 1839. From this same year dates also his extended investigation of the chemical properties of hematin, the colouring matter of the blood. The examination of blood enlisted his attention at various intervals, and led to numerous analytical tests, to one of which we owe the proof of the presence of carbonic acid as a normal constituent of the blood. In addition to the topics alluded to, Mulder has contributed to physiological chemistry a large variety of minor isolated observations and numerous analyses of various products of the animal economy.

In the chemistry of vegetable physiology he developed a scarcely less noteworthy activity and diversity. In 1839 and 1840 were published important papers on inulin and starch, and on pectin and pectic acid. At the same time appeared his analytical investigations on the composition of silk, of gum arabic and other gums, of the poison of the upas, of various sorts of tea and coffee, of tannic acid, of numerous ethereal oils, of the resinous matter in turf, of salicin and phlorizin, and of the compounds rufin and rutile, derived from them, and of gluten. In 1839 he published an extensive research on cassia-oil and cinnamon-oil, and on benzene, in which numerous derivatives of these bodies are described. In the year following he completed an elaborate investigation on the ulmic bodies, which forms the chief basis of our knowledge in this still comparatively obscure field. This was followed by interesting researches on yeast (1844), on chlorophyll, on the presence of waxy constituents in many ordinary plants (1844), on the action of acids on woody fibre (1846), on chrysamonic acid and other derivatives from aloes. In 1865 he published a very complete and valuable study on drying oils and their chemical properties, based on a wide range of experimental observation. Mulder made two important contributions to the special chemistry of the aromatic compounds by his discovery in 1839 of meta-nitro-benzoic acid—one of the earliest representatives of the nitro acids—and by his study in 1858 on the formation of picric acid from indigo, in which he advanced the now generally accepted opinion of a transition, by means of isatin and nitrosalicylic acid, from one compound to the other. Organic chemistry is likewise indebted to him for several improvements in analytical methods, and he was one of the first to devise gas furnaces for use in organic combustions.

As an author and editor Prof. Mulder was scarcely less active than as an investigator. His principal works, which are better known in their German translations, are:—"Proeve eener algemeene physiologische Scheikunde" (1843), translated into German by Prof. Kolbe, under the title of "Versuch einer allgemeinen physiologischen Chemie;" "Die Ernährung in ihrem Zusammenhang mit dem Volksgeist" (1847); "Die Chemie des Weins" (1856); "Die Chemie des Biers" (1858); "Die Silberprobirmethode" (1859); "Die Chemie der

Ackerkrume," 3 vols. (1864); "Beiträge zur Geschichte des chemisch gebundenen Wassers" (1864); "Die Chemie der austrocknenden Oele" (1867). As an editor he published, in connection with Van Hall and Vrolik, the "Bijdragen tot de natuurkundige wetenschappen" from 1826 to 1832. During the six years following he edited the "Natuur-en scheikundige Archief." After uniting for several years with Miquel and Wenckebach in the editorship of the "Bulletin des Sciences physiques et naturelles en Néerlande," he has issued since 1842 the "Scheikundige Verhandelungen en Onderzoekingen" (Rotterdam), the only chemical journal of Holland.

Prof. Mulder was frequently intrusted by his Government with important commissions, and has contributed greatly by his pen and speech to the cultivation of chemistry in Holland. In 1860 he was elected an honorary member of the London Chemical Society. T. H. N.

NOTES

A CONSIDERABLE number of the Fellows of the Royal Society have decided to add a portrait of Sir Joseph Hooker to the valuable collection of historical portraits belonging to the Society, and they invite others to join in the subscription. Cheques crossed "Barclay and Co., for the Sir J. Hooker Portrait Fund," to be paid to Messrs. Barclay and Co., 54, Lombard Street, E.C.

AT the last meeting of the Chemical Society it was announced that the Longstaff Medal had been awarded to Prof. Thorpe, of the Yorkshire College, Leeds. Prof. Thorpe is the first recipient of the medal.

ON Sunday, May 23, M. Dumas was presented by the Société d'Encouragement with a civic crown, in acknowledgment of the services rendered to science and to France during more than half a century.

THE Emperor of Germany has appointed Prof. Baron von Nordenskjöld a foreign Knight of the Ordre pour le Mérite for Arts and Sciences.

THE Visitation of the Royal Observatory takes place on Saturday.

THE funds for the erection of a monument in memory of the great philosopher, Leibnitz, at Leipzig, have now reached the sum considered necessary, and Prof. Hänel of Dresden is about to execute the monument. It will be erected on the southern side of the St. Thomas Churchyard. The statue of Leibnitz will be of bronze, and will measure 3½ metres in height. The pedestal will have the same height, and will be adorned by four bas reliefs.

WE have to record the death of Mr. Alfred Swaine Taylor, F.R.S., the physician and toxicologist. He was born at Northfleet, Kent, in December, 1806. He was a pupil of Sir Astley Cooper and Mr. J. H. Green at Guy's Hospital, and afterwards studied in the leading medical schools of France, Germany, and Italy. In 1830 he entered the Royal College of Surgeons, was admitted a Licentiate of the Royal College of Physicians in 1848, and was elected a Fellow of the same five years later. In 1845 he was chosen a Fellow of the Royal Society. He was the first holder of the chair of Medical Jurisprudence in Guy's Hospital, and was for many years joint-Professor, and subsequently sole Professor, of Chemistry. Dr. Swaine Taylor was the author of several professional treatises, more especially on the subjects of poisons and poisonings, chemistry, and medical jurisprudence; and he had received the honorary degree of M.D. from the University of St. Andrew's.

ON May 15 the Congress of Bohemian Naturalists was opened at Prague. Dr. Albert, of Innsbruck University, was elected

president. Prof. Krejci, a geologist of repute, delivered an address in which he pointed out the importance of German natural science, rather a bold, and certainly commendable, thing to do in the somewhat narrow-minded Czech capital.

THE Swiss Natural History Society will hold its general meeting on September 12-15 next, in the small town of Brieg, in the canton Vaud, at the foot of the Simplon.

WE are pleased to hear that negotiations are in progress for the transfer of the Museum Godeffroy to the City of Hamburg. In it are to be found by far the finest series of the zoological and ethnographical products of the Pacific Islands yet assembled together, including, we believe, all the types of the new species described in the thirteen "Hefts" of the *Journal des Muséum Godeffroy*. It would be a great misfortune to science if these were distributed all over the world by the auctioneer's hammer, so that it is much to be hoped that a satisfactory arrangement will be come to between the liquidators of the "Maison Godeffroy" and the citizens of Hamburg.

THE Emperor of Russia has conferred the Grand Cross of the Order of Stanislaus upon Dr. Hermann Obst, the director of the Ethnographical Museum of Leipzig.

WE would earnestly draw the attention of our readers to the fact that the Secretary of the Smithsonian Institution, Washington, U.S., of which Mr. James Smithson was the founder, is desirous of obtaining information respecting that gentleman to assist in the preparation of a memoir. James Smithson, F.R.S., was the son of Hugh, first Duke of Northumberland, and Elizabeth, heiress of the Hungerfords of Audley, and niece of Charles, Duke of Somerset. In 1826 he resided at Bentinck Street, Cavendish Square. He died in 1829. The following are some of the points on which information is desired:—"John Fitall, a trusted servant of Mr. James Smithson, died June 14, 1834, at Bush House, Wanstead, Essex, England. Have his heirs any relics or mementoes of Mr. Smithson—any notes, letters, &c.? Mr. Charles Drummond, a London banker, was the executor of Mr. Smithson. Can we procure originals or copies of any letters of Mr. Smithson from him? What do the records of the Royal Society say as to the election of James Lewis Macie as a Fellow? Perhaps a report was made to the Council as to his qualifications? What can be learned of the disagreement between Mr. Smithson and the Council of the Royal Society? Mr. Wheatstone knew of it. Do any of the surviving Members remember the circumstances? Information relative to Henry Louis Dickinson (half-brother of James Smithson), Colonel of the 84th Regiment of Foot. Information relative to the college life of James Lewis Macie, a graduate of May 26, 1786, of Pembroke College, Oxford University. Letters from James Smithson to Sir Humphrey Davy, Sir Davies Gilbert, Hon. Henry Cavendish, Dr. W. H. Wollaston, Mr. Smithson Tennant, Dr. Joseph Black, Dr. Hutton, M. Arago, M. Gay Lussac, M. Cordier, M. Haiiy, M. Klaproth, M. A. C. Becquerel, M. Fanjas de St. Fond, Mr. Thornton, Mr. Maclaire, Mr. Wm. Thomson; or any original letters of Mr. Smithson. Can the original manuscripts be found of Mr. Smithson's communications to the Royal Society or to Thomson's "Annals of Philosophy"? Can Mr. Smithson's authorship of papers or articles in any scientific journals be identified? What can be learned of Mr. Smithson's mother, Mrs. Macie? or of Col. Henry Louis Dickinson's mother, Mrs. Mary Ann Coates? At what number in Bentinck Street did Mr. Smithson reside? (He held apartments, was not a householder.) Had he at any time any other residence; if so, where?" Any information on the above points should be addressed to Prof. Spencer F. Baird, care of William Wesley, 28, Essex Street, Strand, London, the agent of the Smithsonian Institution.

MR. STORY MASKELYNE put his maiden question in Parliament the other evening very appropriately in connection with

the Natural History Museum. Mr. Adam, in reply, stated that the trustees of the British Museum had been informed that they may now proceed to remove their collections to the new Natural History Museum. The question of providing residences for the officers of the museum was considered by the late Government, who did not see their way to comply with the request. At present, therefore, it is not contemplated that any such residences should be erected.

A DIFFICULTY has supervened in the St. Gothard tunnel, which, according to the *Times* correspondent, threatens seriously to retard the completion of the undertaking. In a part of it where the formation is a porous white stone the vaulting has already given way two or three times, and it has required the greatest care and constant staying with timber to prevent the passage thereabouts from completely collapsing. It was thought, however, that a granite wall 6 feet thick would be sufficiently strong to support the superincumbent mass of white stone and keep the tunnel permanently open. A wall of this thickness has just been finished, but it too has begun to give way, and the engineers are at their wits-end how to overcome the difficulty. In the opinion of Dr. Stapf, the geologist of the tunnel, it can be overcome only by making a wide curve so as to get round the white stone instead of going through it. This would involve the entire reconstruction of that part of the tunnel, in which case it will probably not be ready for traffic before the time fixed for the completion of the lines of approach, two years hence.

MR. SETH GREEN, writing to the *New York World* of May 14, says that one morning when he was watching a spider's nest a wasp alighted within an inch or two of the nest, on the side opposite the opening. Creeping noiselessly around towards the entrance of the nest the wasp stopped a little short of it and for a moment remained perfectly quiet; then reaching out one of his antennæ he wiggled it before the opening and withdrew it. This overture had the desired effect, for the boss of the nest, as large a spider as one ordinarily sees, came out to see what was wrong and to set it to rights. No sooner had the spider emerged to that point at which he was at the worst disadvantage than the wasp, with a quick movement, thrust his sting into the body of his foe, killing him easily and almost instantly. The experiment was repeated on the part of the wasp, and when there was no response from the inside he became satisfied, probably, that he held the fort. At all events he proceeded to enter the nest and slaughter the young spiders, which were afterwards lugged off one at a time.

IN a series of papers on the northern part of the continent, contributed to an Australian paper under the somewhat odd title of "Northern Lights," the writer mentions a curious feature of the creeks and lagoons in the north of Queensland. This is what is called "floating grass." It is a tall aquatic grass, which, while growing in the mud when within reach, is quite independent in that respect, and extends its creeping stems into the deepest water; and by the interweaving of these, and of the roots emitted from every joint, makes a dense mat of verdure, which, at first sight, seems to have its origin on solid ground. It is however quite possible to walk on it without risk of entanglement. The method is to keep going, lifting the feet well, and with the body in as flat a position as possible. Horses and cattle are fond of this grass, and it is said that the masses of it are sometimes so dense, although with twenty feet of water underneath, that horses have been known to cross on them.

ON the French Eastern Railway Achard electric brakes are being tried, and are said to work satisfactorily. The electricity is not supplied by ordinary cells, but by Planté's accumulating battery.

A MEETING of the Epping Forest and County of Essex Naturalists' Field Club was held on Saturday, May 29, at Buck-

hurst Hill, when a lecture was delivered by Mr. Henry Walker, F.G.S., entitled "A Day's Elephant Hunting in Essex." At the conclusion of the lecture Sir Antonio Brady, who has taken an active interest in the formation of the Club, gave a detailed account of his method of removing and subsequently preserving the mammalian remains from the brick-earth pits at Ilford.

MR. C. S. SARGENT, Harvard Professor of Arboriculture, has published, in his capacity of special agent of the approaching United States census, a "Catalogue of the Forest Trees of North America," preliminary to one which will be added to the census report on the forest wealth of the United States. He desires information concerning the geographical range of any species, the most favourable region and elevation and geographical formation for its multiplication and perfection, its exceptionally large dimensions, its common or local name, and its products and uses.

THE number of persons who die from small pox is increasing daily in Paris. Statistics prove that 858 died in 1879, and not less than 1,038 in the four first months of 1880. This circumstance has created a great impression, and Dr. Liouville, in the Chamber of Deputies, has proposed a law to render vaccination compulsory. It has been reported upon favourably by the committee, and will accordingly in all probability soon become a part of the law of the land.

SEVERAL papers have stated that an official commission will be appointed in France to witness the crossing of the British Channel by a balloon travelling from France to England (weather permitting). The fact is that the experiment is to be made from Boulogne by M. Javis, with his own balloon and at his own risk. But the port authorities have agreed to send M. Javis such information as will enable him to select for starting a time when the wind is blowing with some sufficient prospect of reaching England. M. Javis will keep watch from June 1 to 20. A steamer will follow as far as possible the hardy aéronaut on his adventurous trip.

A BRANCH of the recently-founded Thüringer-Wald Club has been formed at Leipzig. A similar club, at present numbering twenty-five members, has been opened at Plauen (Saxony) with a view of promoting and furthering visits of tourists to the so-called Voigtland. The club will improve the roads, undertake excursions on a larger scale, see to the fixing of proper sign-posts, &c.

ON the shores of the Lake of Constance the rare phenomenon of a perfect solar halo was noticed on May 4 at noon. The large ring, which from time to time assumed splendid rainbow tints, remained visible for more than two hours. At Berlin the phenomenon of mock suns was observed on the 9th inst. at 8 a.m.

INTERESTING discoveries are reported from Italy. Near Este, in the Veneto, at the foot of the Euganean Mountains, Prof. Prosdocimi discovered a prehistoric burial-ground with many bronze and clay vessels. Eighty-two tombs were found, of which forty-four seemed to have been opened already by the Romans, while the contents of the others seemed untouched. The urns belong to three different periods, some are stained black with linear ornaments, others are striped red and black. Some vases are of such exquisite workmanship that they could even to-day serve as patterns. A small case of bronze is adorned with human and animal figures.

M. VAROY, French Minister of Public Works, has visited in state the regional competition of Bar-le-Duc, and gave an address at a banquet. In this competition the most notable feature was the work done on a large field by a Gramme machine and a Fowler plough before the Minister and an immense crowd on

May 23. The electric current also gave motion to some agricultural machines at a distance. This remarkable experiment was conducted by M. Felix, of Germase, a country place in the vicinity of Bar-le-Duc, where similar experiments on a smaller scale were made last year.

THE Twelfth and Thirteenth Annual Reports of American Archaeology and Ethnology contain, as usual, several papers of great ethnological interest. From the Report of the curator, Mr. F. W. Putnam, it is evident that much excellent work continues to be done in the museum, which is rapidly becoming one of the most valuable repertoires of ethnology in the world. The papers are all connected with American ethnology, the most important probably being that of Mr. Bandelier, on the Social Organisation and Mode of Government of the Ancient Mexicans.

THE *Proceedings* of the Davenport (U.S.) Academy of Natural Sciences, vol. i. part 2, while it contains a number of papers in natural history, is noteworthy mainly for the large number of papers on subjects connected with American ethnology, and chiefly on various mound explorations. We are pleased to see that this society continues to prosper; it had the originality to elect as its president for 1879 Mrs. Mary L. D. Putnam.

NO. 4 of the Columbia College *School of Mines Quarterly* is better than ever, and we are glad to learn that it has successfully passed its brief probationary period, and is now regarded as an assured and unexpected success. Among the articles in this number are "Sanitary Problems of New York City," by Prof. Trowbridge; "Artificial Diamonds," by Mr. Lucius Pitkin; "Volumetric Analysis of Sulphuric Acid," by Mr. A. H. Elliott; "A New Planometer," by Mr. L. M. Hooper.

IN the *Transactions* of the Academy of Science of St. Louis, vol. iv. No. 1, are several papers deserving attention. Mr. N. Holmes has a specially interesting paper on the "Geological and Geographical Distribution of the Human Race," and students of the science of language will be interested in M. Cornu y Coludo's account of the Zoque language, spoken in the State of Chiapas, Mexico. There are two magnetic papers by Prof. Nipher, a paper on *Pentremites* by Dr. G. Hambach; on the genus *Pinus* by M. G. Engelmann, who has also a short paper on acorns and their germination.

AS one of their "Occasional Papers" the Boston Society of Natural History have published a volume of great value on the "Geology of Eastern Massachusetts," by Mr. W. O. Crosby. It is evidently the result of long and competent investigation, is well illustrated, and contains a large and well-printed geological map of the region treated of.

THE additions to the Zoological Society's Gardens during the past week include a Grey-cheeked Monkey (*Cercocebus albigena*) from West Africa, presented by the Earl of Lonsdale, F.Z.S.; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, a Balearic Crowned Crane (*Balearica pavonina*) from West Africa, presented by Mr. Frank Simpson; two Cashmere Shawl Goats (*Capra hircus*) from India, presented by Dr. W. Taylor; an Alexandrine Parrakeet (*Palæornis alexandri*) from India, two West African Love Birds (*Agapornis pullaria*) from West Africa, a Common Raven (*Corvus corax*), European, a Crimson-eared Waxbill (*Estrellda phanictotis*) from West Africa, presented by Mr. C. Williams; a South American Rat Snake (*Spilotes varibilis*) from Demerara, presented by Mr. G. H. Hawtayne, C.M.Z.S.; three Cashmere Shawl Goats (*Capra hircus*) from India, a Malbrouck Monkey (*Cercopithecus cynosurus*) from East Africa, a Philippine Paradoxure (*Paradoxurus philippensis*) from the Philippine Isles, three Black Tortoises (*Testudo carbonaria*) from Demerara, deposited; two Purple-faced Monkeys (*Semnopithecus leucoprymnus*) from Ceylon, a Ludio Monkey (*Cerco-*

pithecus ludio), an African Brush-tailed Porcupine (*Atherura africana*) from West Africa, three Indian Tantal (*Tantalus leucoccephalus*) from India, an American Bison (*Bison americanus*) from North America, a Schomburgk's Deer (*Cervus schomburgki*) from Siam, two Side-striped Jackals (*Canis lateralis*) from West Africa, two Spotted Hyenas (*Hyana crocuta*) from South Africa, two Crested Screamers (*Chauna chavaria*) from Buenos Ayres, five Black-necked Swans (*Cygnus nigricollis*) from Antarctic America, purchased; an Axis Deer (*Cervus axis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

OCCULTATION OF A FIXED STAR BY SATURN.—It is recorded by Whiston, in his life of Dr. Clarke, that the father of the latter once saw a star in the dark space between the ring and the ball, though, so far as we are aware, no date for the observation or other particulars have been preserved. Gottfried Kirch, the discoverer of the great comet of 1680, appears to have been very nearly a witness of a similar phenomenon, if indeed his telescope had been equal to the occasion. Observing Saturn at Leipsic on the evening of January 16, 1679, he remarked, about 10h., that the star σ Tauri of Bayer (114 Tauri Fl.), of the sixth magnitude, was distant only one diameter from the extremity of the ring. The night was changeable, and clouds subsequently interfered, but two hours after midnight he found the star "quarta forsan parte diametri Saturni, a Saturno distantem." A quarter of an hour later he saw that the distance had sensibly diminished, and in another half hour the star had become so small "adeo ut fermè conspectum fugeret. Neque procul aberat a Saturno, ut spatium inter Saturnum et stellulam, ipsius stellæ magnitudinem non superare videretur;" and he continues: "Stellula postea tangebatur fermè extremum Saturni." An accompanying rough figure shows the star very nearly in contact with the extremity of the ring. Further we read: "Inter primum et secundum quadrantem post horam tertiam nihil dignoscere poteram, primo stellula Saturno adhesisse mihi videbatur, de quo tamen nihil certi dicere possum, ipse enim dubito; deinde nihil videndum scire offerbat." But although he saw no more, Kirch states that Saturn would necessarily shortly occult the star. On the following evening, at 8h. 30m., the star was distant about a diameter of the planet, or rather, as the figure shows, of the ring. He considered from these observations that the star was in contact at 3 a.m. on January 17, and that the egress took place about 11 a.m. It will be found that Saturn did not set at Leipsic on this morning until nearly 5h. 30m., and by the track of the planet the central distance at conjunction was less than a third of the semi-diameter of the shorter axis of the ring, thus the star might be within the dark space between the ring and the globe before setting. The planet was then about 83° from the node of the ring, which must therefore have been nearly as open as we can see it. Kirch seems to have been well aware of the rarity of such an observation. It was first published in his Ephemerides for 1683.

THE POLAR COMPRESSION OF MARS.—In November last Prof. Young made a numerous series of measures of the diameters of Mars with a filar-micrometer attached to the 9.5-inch equatorial of the School of Science Observatory at Princeton, New Jersey, U.S., the object-glass of which is stated to be of the highest excellence, having repeatedly shown both satellites of Mars, the two outer satellites of Uranus, and, it is said, the Saturnian satellite Mimas. Although measures with the wire-micrometer have been found liable to considerable constant error, it was thought they might safely be used in determining a difference of diameter. Mr. Marth's ephemeris was employed in setting the position-circle and in computing the minute corrections for phase. The total number of micrometer-readings was 1,140. The results applicable to November 12, 1879, are as follow:—

Equatorial diameter	20.634 \pm 0.034
Polar diameter	20.552 \pm 0.043
Mean	20.593 \pm 0.035

These absolute values Prof. Young considered not very reliable, being subject to the considerable constant error referred to above.

Dr. Hartwig's determination of the mean diameter of Mars, by combining all the double-image measures at Königsberg,

Leyden, Oxford, Berlin, Paris, and Strassburg, gives for the opposition-diameter in 1879, 19".128, which differs from Prof. Young's result by 1".46, which he says is a difference "rather unexpectedly large, but not unprecedented." As regards the compression, the immediate object of the Princeton measure, the final result comes out $\frac{1}{1.10}$, the limits of probable error extending from $\frac{1}{1.15}$ to $\frac{1}{1.05}$. The discussion of the measures was nearly finished, when Prof. J. C. Adams's paper upon the orbits of the satellites of Mars was published; he there gives $\frac{1}{1.15}$ as the ellipticity of the planet, if it follows the same law of central density as the earth. This near agreement is probably to a considerable extent an accidental one.

Dr. Hartwig's value for the polar diameter of Mars at distance unity is 9".352, corresponding, with Leverrier's solar parallax, to a real diameter of 4,180 miles.

THE NEXT TOTAL SOLAR ECLIPSE.—At the recent annual meeting of the National Academy of Sciences at Washington, Mr. D. P. Todd, of the office of the *American Ephemeris*, communicated a paper "On the Use of the Electric Telegraph during Total Eclipses applied to the Search for Intra-Mercurial Planets," with the view to illustrate in what manner the rare moments of total eclipses may be utilised to their utmost extent, "the method consisting in the electro-telegraphic transmission of important observations made at western stations to observers at eastern stations, with due speed for their verification or rejection when the lunar shadow reaches the latter stations." Taking as an example the next total eclipse of the sun, on May 16, 1882, it is remarked that the path of totality lies almost wholly on land; commencing in Western Africa, with a north-easterly direction, it crosses Upper Egypt and the Red Sea, passing a few miles south of Bagdad and Teheran, and thence traversing Central Asia, it leaves that continent near Shanghai. Thus several widely-separated regions, connected by telegraphic cables and land lines, are upon the track of the central eclipse. Mr. Todd remarks that from El-Akhmym, on the Nile, a line runs north to Alexandria, from which place Teheran is directly accessible by telegraph. From Teheran a land-line runs south-east through Beluchistan and Hindostan to Madras, which is connected by cable-lines with Singapore, Hong-kong, and Shanghai. He points out that an additional advantage attaches to this eclipse from the circumstance that there is a duplicate line of telegraphic connection between Egypt and Shanghai by way of Constantinople, Vienna, and Moscow, and thence by the Russian line through Siberia to Wladiwostok, and thence to Shanghai. Supposing, then, that an intra-Mercurial planet were discovered during totality in Egypt, a duplicate message might be sent, to insure beyond doubt that the discovery should be known to observers at Shanghai; if a planet were observed at El-Akhmym, 45 minutes of absolute time elapsing before the shadow reaches Teheran, the position might be telegraphed to the latter station so as to give the observer abundant time to verify the discovery, while observations at both places might be telegraphed to Shanghai, which the shadow will not reach until more than two hours after leaving Teheran. Mr. Todd thinks that the telegraph companies, with the courtesy they have always shown in scientific undertakings, would render every assistance in carrying out such a scheme.

We take this outline from a report of his communication to the American Academy, received from Mr. Todd.

BIOLOGICAL NOTES

CHINESE ALLIGATORS.—Two fine examples of the alligator of the Yang-tse-kiang, of the discovery of which we spoke in our issue of February 13, 1879 (vol. xix. p. 351), have recently been received by Dr. Peters for the Zoological Museum of Berlin. There can be no doubt, we understand, that M. Fauvel is quite right, and that this crocodilian is an undoubted *Alligator*—being the first of this genus which has been found to occur in the Old World. It will be recollected that of the remarkable Chondrosteian genus of fishes, *Polyodon*, one of the two known species is also found in the Yang-tse, while the other is confined to the Mississippi.

FOSSIL CORALS.—The Cyathocrinidæ, as one of the largest and most ancient groups of fossils, appear to belong to a type worthy of attracting continual study. Wachsmuth and Springer (*Proc. Acad. Nat. Sci., Philad.*, 1879) unite the genera *Poterlocrinus* and *Cyathocrinus* into one family, finding them agreeing in having large oral plates supporting the ambulacral grooves and covering the